CALCULUS 1210-002

DIAGNOSTIC TEST; Due Wednesday, 8-26-2015

Your Name (Print in block letters):

INSTRUCTIONS

Show Your Work

1. Find an equation of a line through the points (1, 2) and (0, 3)
2. Find an equation of a straight line passing through the point (2, 3) and perpendicular to the line $x + y = 11$. 
3. (a) Expand: \((a + b)^3\)  \hspace{1cm} (b) \((a + b)^5\)

Do you know how to do (b) with minimal amount of calculations?
4. Rationalize the denominator in the expression

\[
\frac{2}{\sqrt{5} - \sqrt{2}}
\]
5. If \( f(x) = x^2 + 1 \), find
(a) \( f(x + 1) \)
(b) \( f(1/t) \)
(c) \( f(t) \)
6. If \( f(x) = x^2 + 1 \), and \( g(x) = \sqrt{x} \), find
(a) \( f \circ g(x) \)
(b) \( g \circ f(x) \)
7. Factor
(a) $x^2 - 1$
(b) $x^3 - 1$
(c) $x^3 + 27$